MEMORANDUM FOR: C/DS

Frank

looks good to me.

26 Aug 66
(DATE)

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Subject: Automatic Materials Transport Study

Classification: Uncl. Project No. 99709-7

Originator: STAT Date Aug 8, 1966

	Initials	Date
(1) Unit Leader		
✓ (2) Type Rough		9 Aug 66
(3) Section Chief		10 Aug 66
(4) Chief, DB		12
(5) Asst. for P&DS Note deletion on p. 1.		15 Aug 66
(6) Originator		
(7) Type Smooth		17 Aug 66
(8) Section Chief		18 Aug 66
(9) Chief, DB		18 Aug 66
(10) Asst. for P&DS		

Date of Final Disposition:

File Copy:

(1) Deputy Chief, DB		26 Aug 66
(2) Originator		
(3) Section Chief		
(4) Secretary (For Filing)		

REMARKS:

Excellent except we should add what the gov't will provide such as blueprints of the present facility showing rooms, etc. plus power & H/C if they plan to run

16 August 1966

STUDY OBJECTIVES

AUTOMATIC MATERIALS TRANSPORT STUDY

1. INTRODUCTION. This document presents the objectives of a Government sponsored program to study means for physically handling materials such as rolls of photographic film, books, memorandums, etc. While this study is concerned with the physical handling of a variety of materials, this document will describe primarily the problems associated with roll film handling since roll film encompasses the largest quantity of transported materials.

2. BACKGROUND. Many thousands of rolls of film are presently stored in a film library located in a multistory building. The quantity of material in this library is increasing at an alarming rate. The registering, storing, retrieving and transportation of this film on a timely basis has become an ever growing problem. The ultimate objective is to deliver the film to the user in the shortest practical time. Also, many publications, maps, memorandums and other items are transported from one office to another. Daily, a total of 2000 to 3000 pieces of material are sent from one part of the building to another. Over 100 man hours are needed each day to accompany this material while it is in transit. At least an equal amount of time is spent in waiting for the material to be located, searched, or otherwise prepared for transportation. An automatic transport system would reduce the man-hours necessary for delivery as well as speed delivery time.

The present method of storing rolls of film is to place each roll in a cylindrical container and store these containers on shelves. Several size containers are used varying in size from 5 1/2 inches O.D. by 3 inches long to 8 inches O.D. by 12 inches long. When loaded with film, they weigh from 3 to 18 pounds. Each roll of film is assigned a number and the rolls are stored essentially in numerical order. There are from one to seven copies of a particular film.

A borrower requests the film by filling out a form and sending it or delivering it in person to a central location. A librarian then searches for the film on the shelves and delivers it to the borrower. If a copy of the film is not available, the charge out file is then consulted to find the individual who has the film on loan.

The greatest lag in the system occurs when the film is in transit between the borrower and the library and while it is waiting to have its return recorded.

3. CONCEPT. This study will be divided into two distinct phases. These phases and their concepts follow.

3.1 Initial Study Phase - Before equipment can be selected to speed the handling of materials, the nature of these materials must first be ascertained. Therefore, the Initial Study Phase must determine the type, size, quantity, starting and terminal locations of items that are transported each day. The control necessary for transmittal of documents must also be studied. Certain classified items require assurance that properly authorized personnel are requesting them. Equipment, chemicals and other large or unusual types of material are not included in this study unless they are of such a nature as to obviously be incorporated into the final recommendations of this study.

When the preceding required information on the materials has been obtained the Government will review the preliminary results of the study to confirm whether sufficient knowledge has been included.

The Initial Study Phase will then be continued by the contractor to decide the areas where techniques and equipment can most economically and most advantageously be applied.

The contractor will reveal all practical techniques and systems which may be used to advantage in transporting the materials under study. These techniques and systems should fulfill the requirements listed in this document.

The advantages and disadvantages of each technique and system must be made clear. This information must be presented in report form with all of the details needed for the Government to select those items most suitable for its needs. The contractor should recommend those techniques and/or systems which he feels best accomplish the requirements although the final selection will be the prerogative of the Government.

During the period that the Government is reviewing the contractor's report and selecting the techniques and systems for its needs, the contractor must be available to furnish professional consultation and to provide additional related information when the Government deems necessary.

3.2 Specification Phase - After the Government has selected the techniques and/or systems from the Initial Study Phase Report the contractor will be required to provide complete specifications needed for their implementation. A description of each technique or system is needed as well as specifications for each component. Also required are floor plans, installation procedures, maintenance and training requirements and a schedule of necessary modifications to the existing building or equipment.

3.3 Implementation Phase - This phase will be comprised of the procurement, installation and development to an operational phase of all of the equipment and techniques selected under the Specifications Phase. The Implementation Phase will not be a part of this contract but separate proposals will be solicited after the Specification Phase is completed. Since the Implementation Phase will rely heavily on the information provided in the Specifications Phase, it is imperative that the latter contain all specifications needed to carry out this final phase.

4. STUDY OBJECTIVES.

4.1 An objective of this study is to provide a system to accurately account for each controlled document or roll of film. Its location must be known at all times, whether it is on the shelf, in transit, or in the possession of a borrower. Means of recording outgoing and incoming material must be simple and must quickly enter the accounting system. Information as to the item's location must be rapidly recalled. The accounting system should be capable of providing statistics on the disposition of film and other controlled documents, i.e., how many rolls of film were borrowed during a specific period, the identification of rolls of film assigned to a specific borrower, etc.

4.2 Another objective is to speed the storage of film from a central location to the shelves and retrieval therefrom. This could possibly be done by some automated mechanical, pneumatic or other type system.

4.3 Another objective is to transport those materials which are of a practical size and weight, by means of some mechanical, pneumatic or other system to various locations in a multistory building. Consideration must be given to insure that only the authorized requester actually receives the film at the remote location.

4.4 Since a central computer facility is in use in the building under study, it is imperative that every consideration be given to the utilization of this facility where computers are needed.

4.5 It should be stressed that the overall objective is to improve methods of transporting materials. This requires the material to be transported to the user in the shortest practical time in an economical manner and requires an accurate, responsive information system to account for all controlled documents.

5. REQUIREMENTS.

5.1 Initial Study Phase Requirements - Review section 3.1 of this document for the concept of this Phase. Following is a more detailed description of the information required under this part of the study.

This information should be obtained for present conditions and for estimated future conditions. While these requirements listed are those felt to be important in the eventual selection of a materials transport system, the contractor should not consider them as being complete and should provide any additional information which may be needed to assist in the most advantageous choice of equipment for the Government's use.

5.1.1. Identity of Transported Material. The materials should be identified and labeled as document, map, film container, etc. Where possible, the nomenclature used should be the same as the one most commonly used to identify the material.

5.1.2. Size of Material. The physical dimensions and weight of each object should be determined. It should also be noted whether the object may be folded, rolled or otherwise made to assume a different shape.

5.1.3. Quantity of Material. The number of each identified material should be determined. It is also important to note if the quantity transported fluctuates during the day, week or year.

5.1.4. Path of Movement. The point-to-point movement must be determined. The initiating, intermediate and receiving offices must be learned.

5.1.5. Time and Manpower. The time consumed in the entire transmission of each material must be ascertained as well as the hourly rate of the person usually engaged in the transmission.

5.1.6. Control of Material. Some classified items must be signed for and a record kept of their disposition. This study must obtain information on the type of control that is needed and the time and manpower requirements needed for present control.

5.2. Evaluation Criteria - Following are criteria which should be used in evaluating techniques, system concepts and equipment reviewed in this study. Other criteria may be suggested by the contractor. All information on available transport techniques and systems as well as an analysis of how these criteria were used in evaluating them must be included in the report.

5.2.1. Compatibility. This is a measure of how well the system functions in harmony with other proposed or existing systems or components.

5.2.2. Ease of Phase-In. This indicates how much disruption in operations will occur during implementation.

5.2.3. Expandability. A measure is needed to determine how easily a system can be expanded to accept an increased quantity of material or increased distance of travel.

5.2.4. Facility Requirements. This criterion includes unusual or extensive site preparation, utility requirements, communication circuits, etc.

5.2.5. Flexibility. It is necessary to know if a system can accept new types of materials with little or no modifications.

5.2.6. Form and Organization of Information. This is a measure of how adequately control and documentation information meets the needs of the users. Hopefully it would present a direct read out rather than coded information.

5.2.7. Personnel Requirements. This criterion measures the manpower and salaries of personnel required to accomplish the present method as well as the proposed method of materials transport. Consideration should also be given to personnel skills since the need of operators possessing unusual skills may prove impractical.

5.2.8. Reliability. This is a measure of how consistently a system functions over an extended period of time. If a component fails, the system should preferably still be able to perform its most important functions.

5.2.9. System Performance. The primary goal is that the system must accomplish the objectives listed under section 4. It must be determined how long it takes to deliver an item to the person requesting it and how long it takes to query the control system to recall an item from the borrower.

5.2.10. Total System Cost. This includes initial investment and operational costs including maintenance costs. Items such as equipment costs, costs for computer program development, supplies, maintenance, etc. must be considered.

5.3. Specification Requirements - This phase will require a report containing complete specifications necessary for installation and implementation of all of the equipment and systems selected from the Initial Study Phase. Following are a list of specification requirements. The contractor should not consider them as being complete and should furnish any other information needed to facilitate implementation.

5.3.1. System description. An explanation of the concept, operation and function of the system must be provided.

5.3.2. Specification of components. All specifications needed to identify each unit will be required. This should include any modifications to commercially available equipment or design parameters for special components.

5.3.3. Modifications. Descriptions must be furnished for all necessary modifications to existing buildings or equipment. Included must also be any techniques or procedures that are to be changed.

5.3.4. Floor plans. Floor plans should show the location of all components as well as the outline of rooms, and any structural steel, piping, ducts and equipment that effect the installation of the equipment. The Government will furnish scaled diagrams of the building and its facilities to the contractor securing this project.

5.3.5. Implementation plan. A plan should be devised to cause minimum disruption of normal operations during installation. PERT charts should be included.

5.3.6. Training plan. A description is needed of the training required to operate the system.

6. DOCUMENTATION. See attached Specification No. DB-1001, Issue Date 31 August 1966, General Requirements For Contractual Documentation. These specifications shall apply to the documents required under this study except as they are amended in this document or by the contract.

6.1. Ten copies of the Initial Study Phase Report will be furnished by the contractor.

6.2. Ten copies of the Specifications Phase Report will be furnished by the contractor.

7. TIMING. It is anticipated that this study can be completed within six months. This includes all of the contractor's work required in the Initial Study Phase and the Specification Phase but does not include time necessary for the Government to select the techniques and systems to be used.